AMENDMENTS TO THE CLAIMS

1. (currently amended) A micro-shape transcription method for producing an optical waveguide or a diffraction grating from thermoplastic resin, said method comprising:

pressing a mold having a transcription face against the thermoplastic resin as a base material heated to a pressing temperature ~~that is about 180°C~~ to transcribe a micro pattern to a surface of the base material, the transcription face having a concavo-convex pattern thereon,

separating the mold from the base material at a separating temperature ~~that ranges from 120-150°C~~,

wherein when assuming a temperature for pressing the mold against the base material as T_1 (°C), a temperature for separating the mold from the base material as T_2 (°C), thermal expansion coefficients of the mold and the base material as α_a and α_b, and the maximum distance between a transcription center of the transcription face and the concavo-convex pattern as d (mm), timing of forcibly separating the mold from the base material is determined so that the following relations (1) and (2):

$$T_1 \geq T_2 \quad \ldots(1)$$

$$|\alpha_a - \alpha_b| \cdot (T_1 - T_2) \cdot d \leq 4 \times 10^{-2} \quad \ldots(2)$$

are simultaneously satisfied.

2. (original) The micro-shape transcription method according to claim 1, wherein the transcription face of the mold is a plane or stepped plane.

3-4. (canceled)

5. (previously presented) The micro-shape transcription method according to claim 1 or 2, wherein the transcription face has a line width of 100 μm or less.

6. (previously presented) The micro-shape transcription method according to claim 1 or 2, wherein the transcription face has a depth of 1 μm or more.

7. (currently amended) The micro-shape transcription method according to claim 1 or 2, wherein the ~~base material~~ thermoplastic resin comprises an optically-transparent ~~thermoplastic~~ resin~~ or glass~~.

8. (original) The micro-shape transcription method according to claim 7, wherein the thermoplastic resin is selected from the group consisting of polyolefin-, polymethyl-methacrylate-, polycarbonate-, norbornane-, and acrylic-based resins.

9. (withdrawn) A micro-shape transcription apparatus comprising:

a first mold means provided with a transcription face having a micro-shape;

a second mold means facing the first mold means and holding a base material thereon;

a mechanism for driving at least one of the first and second mold means to press the transcription face into the base material and to separate the first mold means from the base material;

a vacuum chuck for attracting and fixing the base material to the second mold means;

wherein the mechanism presses at a temperature up to 180°C and separates at a temperature ranging from 100 to 150°C, said separating temperature being less than said pressing temperature.

10. (previously presented) An optical-component manufacturing method wherein a pattern for controlling light of an optical component is formed in accordance with the micro-shape transcription method of claim 1.

11. (previously presented) An optical component manufacturing method wherein a pattern corresponding to a core of an optical waveguide is formed in accordance with the micro-shape transcription method of claim 1.

12-13. (canceled)

14. (currently amended) [[A]] The micro-shape transcription method of claim 1, wherein ~~comprising~~:

~~pressing a mold having a transcription face against a base material heated to a~~ the pressing temperature ~~that~~ is about 160°C ~~to transcribe a micro pattern to a surface of the base material~~, and

~~separating the mold from the base material at a~~ the separating temperature ~~that ranges~~ is from 100-140°C.

15-18. (canceled)

19. (withdrawn) The micro-shape transcription apparatus according to claim 9, wherein the micro shape is rectangular in cross-section.

20. (withdrawn) The micro-shape transcription apparatus according to claim 9, wherein the micro shape has a depth of approximately 5 μm and a width of approximately 8 μm.

21. (withdrawn) The micro-shape transcription apparatus according to claim 9, wherein the first mold means has a protective coating.

22. (canceled)

23. (previously presented) The optical-component manufacturing method according to claim 10 or 11, wherein the base material has a first refractive index, said method further comprising:

embedding a resin having a second refractive index that differs from the first refractive index of the base material into the pattern.

24. (previously presented) The optical-component manufacturing method according to claim 23, further comprising:

placing a layer over the resin embedded in the pattern.

25. (previously presented) The optical-component manufacturing method according to claim 24, wherein the base material and the layer comprise a second resin.

26. (canceled)

27. (previously presented) The optical-component manufacturing method according to claim 25, wherein the second resin is a polyolefin resin.

28. (canceled)

29. (previously presented) The optical-component manufacturing method according to claim 11, further comprising:

embedding an epoxy resin having a refractive index approximately 0.3% higher than the base material into the pattern to form the core having a top surface and a bottom surface; and

placing a covering material on the top surface of the core.

30. (withdrawn) A method to control operating parameters of a micro-shape transcription apparatus which presses a mold having a transcription face on which a concavo-convex pattern is formed against a base material softened by heating, and forcibly separates the mold from the base material to transcribe a reverse pattern of the concavo-convex pattern to the surface of the base material,

wherein the forcible separation of the mold from the base material is performed based on a study by using a temperature for pressing the mold against the base material and a temperature for separating the mold from the base material as the operating parameters, in consideration of a difference between thermal expansion coefficients of the mold and the base material, and the maximum distance between the transcription center of the transcription face and the concavo-convex pattern.

31. (withdrawn) The method to control operating parameters of a micro-shape transcription apparatus according to claim 30, wherein when assuming the temperature

for pressing the mold against the base material as T_1 (°C), the temperature for separating the mold from the base material as T_2 (°C), the thermal expansion coefficients of the mold and the base material as α_a and α_b, and the maximum distance between the transcription center of the transcription face and the concavo-convex pattern as d (mm), the following relations (1) and (2) :

$$T_1 \geq T_2 \qquad \ldots(1)$$

$$|\alpha_a - \alpha_b| \cdot (T_1 - T_2) \cdot d \leq 4 \times 10^{-2} \qquad \ldots(2)$$

are simultaneously satisfied.

32. (new) The micro-shape transcription method of claim 1, wherein:

the pressing temperature is about 180°C, and the separating temperature is from 120-150°C.